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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,431	12/31/2001	Sushma Shrikant Trivedi	04860.P2687	7868

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EXAMINER

O BRIEN, BARRY J

ART UNIT	PAPER NUMBER
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2183

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,431

Applicant(s)

TRIVEDI ET AL.

Examiner

Barry J. O'Brien

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2001 and 11 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20011231</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-36 have been examined.

Papers Submitted

2. It is hereby acknowledged that the following papers have been received and placed on record in the file: IDS as received on 12/31/01, Extension of Time as received on 6/11/02, and Declaration and Fee as received on 6/11/02.

Information Disclosure Statement

3. The information disclosure statement filed 12/31/01 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. The cited reference "*Proposed SMPTE Standard for Television, SMPTE314M*" does not include a publication date. It has been placed in the application file and has been considered, but the Applicant is required to submit a publication date in response to this office action.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

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5. The applicant is requested to review the specification and update the status of all co-pending applications made mention of, replacing attorney docket numbers with current U.S. application or patent numbers when appropriate.

Claim Objections

6. Claim 20 is objected to because of the following informalities:
- a. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim. A claim that depends from a dependent claim should not be separated by any claim that does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n). See claims 19-21, where claim 20 improperly depends on claim 17, while claims 19 and 21 depend on claim 12.
7. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 3-4, 17, 18, 20 and 26-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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10. The term "substantially simultaneously" in claim 3 is a relative term which renders the claim indefinite. The term "substantially simultaneously" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how close in time, or perhaps in clock cycles, that the events that are claimed to happen "substantially simultaneously", namely the generation of the third plurality of numbers, are to happen. Please clarify the claim language to more clearly define the metes and bounds of the claimed limitations. Dependent claim 4 is also rejected, as dependent claims include all of the limitations of their parent claims.

11. Claim 17 recites the limitation "the single instruction" in its first line. There is insufficient antecedent basis for this limitation in the claim or in its parent claims. See claims 18, 20 and 26 for similar recitations that require correction. Dependent claims 27-36 are also rejected, as dependent claims include all of the limitations of their parent claims.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-7, 10-18, 21-32 and 35-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Chehrazi et al., U.S. Patent No. 6,282,556.

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14. Regarding claims 1, 12, 23 and 26, taking claim 1 as exemplary, Chehrazi has taught a method for execution by a microprocessor in response to receiving a single instruction (see Col.20 lines 42-52), the method comprising:

- a. Receiving a first plurality of numbers (310 of Fig.20B, see Col.20 line 62 – Col.21 line 1) and a second plurality of numbers (312 of Fig.20B, see Col.20 line 62 – Col.21 line 1),
- b. Generating a third plurality of numbers, each of which is an absolute difference between a number in the first plurality of numbers and a number in the second plurality of numbers (see Col.21 lines 6-12),
- c. Wherein the above operations are performed in response to the microprocessor receiving the single instruction (see Col.20 lines 42-52, 61-62).

15. Claims 12, 23 and 26 are nearly identical to claim 1. However, Chehrazi has taught the differences. Claim 12 differs in the claim being comprised within a machine-readable media (see Col.20 lines 42-46), while claims 23 and 26 differs in the claims being comprised within an execution unit (see Col.7 lines 20-40). Besides these differences, the claims encompass the same scope as claim 1. Thus, claims 12, 23 and 26 are rejected for the same reasons as claim 1.

16. Regarding claims 2, 13, 24 and 27, taking claim 2 as exemplary, Chehrazi has taught a method as in claim 1, wherein an absolute difference between a first number and a second number is computed using a method comprising:

- a. Producing a first intermediate number by subtracting the second number from the first number (see Col.21 lines 1-8),

- b. Producing a second intermediate number by subtracting the first number from the second number (see Col.21 lines 1-8),
- c. Selecting a positive number from the first intermediate number and the second intermediate number as the absolute difference between the first number and the second number (see Col.21 lines 8-12),
- d. Wherein the microprocessor is a media processor (108 of Fig.1, see Col.3 lines 6-7) disposed on an integrated circuit with a memory controller (100 of Fig.1, see Col.5 lines 46-54).

17. Claims 13, 24 and 27 are nearly identical to claim 2. Claim 13 lacks the recitation of a media processor disposed on an integrated circuit with a memory controller, and claims 13, 24 and 27 differ in their parent claims, but encompass the same scope as claim 2. Thus, claims 13, 24 and 27 are rejected for the same reasons as claim 2.

18. Regarding claims 3, 14 and 28, taking claim 3 as exemplary, Chehrazi has taught a method as in claim 2, wherein the first intermediate number and the second intermediate number are produced in parallel (see Col.21 lines 1-8), and wherein the third plurality of numbers are generated substantially simultaneously (see Col.21 lines 8-12).

19. Claims 14 and 28 are nearly identical to claim 3, both differing in their lack of having the third plurality of numbers being generated substantially simultaneously, as well as differing in their parent claims; but both encompass the same scope as claim 3. Thus, Claims 14 and 28 are rejected for the same reasons as claim 3.

20. Regarding claims 4, 15 and 29, taking claim 4 as exemplary, Chehrazi has taught a method as in claim 3, further comprising:

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- a. Testing if an overflow occurs in producing the first intermediate number and the second intermediate number (see Col.20 lines 9-18),
- b. Saturating the absolute difference between the first number and the second number if an overflow occurs (see Col.20 lines 9-18).

21. Here, because the SABD instruction is a packed instruction (see Col.20 lines 54-55), if overflow on subtraction operations is detected, saturation is performed on the result of the subtraction (see Col.20 lines 9-18).

22. Claims 15 and 29 are nearly identical to claim 4, differing in their parent claims, but encompassing the same scope as claim 4. Thus, claims 15 and 29 are rejected for the same reasons as claim 4.

23. Regarding claims 5, 16 and 30, taking claim 5 as exemplary, Chehrazi has taught a method as in claim 1, wherein the first plurality of numbers are received from an entry in a register file (see Col.20 lines 47-58).

24. Claims 16 and 30 are nearly identical to claim 5, differing in their parent claims, but encompassing the same scope as claim 5. Thus, claims 16 and 30 are rejected for the same reasons as claim 5.

25. Regarding claims 6, 17 and 31, taking claim 6 as exemplary, Chehrazi has taught a method as in claim 5, wherein the single instruction specifies a way to partition a string of bits in the entry into a first plurality of numbers (see Col.20 lines 61-65). Here, the SABD instruction specifies a register in the register file which corresponds to the plurality of numbers, and specifies that the data in the register be interpreted to be 16 separate 8-bit numbers.

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26. Claims 17 and 31 are nearly identical to claim 6, differing in their parent claims, but encompassing the same scope as claim 6. Thus, claims 17 and 31 are rejected for the same reasons as claim 6.

27. Regarding claims 7, 18 and 32, taking claim 7 as exemplary, Chehrazi has taught a method as in claim 5, wherein the single instruction specifies an index of the entry in the register file (560c and 560d of Fig.20a, see Col.20 lines 47-58).

28. Claims 18 and 32 are nearly identical to claim 7, differing in their parent claims, but encompassing the same scope as claim 7. Thus, claims 18 and 32 are rejected for the same reasons as claim 7.

29. Regarding claims 10, 21 and 35, taking claim 10 as exemplary, Chehrazi has taught a method as in claim 1, wherein a type of each of the first and second pluralities of numbers is one of:

- a. Unsigned integer (see Col.20 lines 54-55),
- b. Signed integer (see Col.20 lines 54-55),
- c. Floating point number.

30. Here, because the claim is written in the alternative format, only one of the three possible limitations is required to be met. Thus, Chehrazi has taught the limitations of claim 10.

31. Claims 21 and 35 are nearly identical to claim 10, differing in their parent claims, but encompassing the same scope as claim 10. Thus, claims 21 and 35 are rejected for the same reasons as claim 10.

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32. Regarding claim 11, 22 and 36, taking claim 11 as exemplary, Chehrazi has taught a method as in claim 1, wherein a size of each of the first and second pluralities of numbers is one of:

- a. 8 bits (see Col.20 lines 61-65),
- b. 16 bits,
- c. 32 bits.

33. Here, because the claim is written in the alternative format, only one of the three possible limitations is required to be met. Thus, Chehrazi has taught the limitations of claim 11.

34. Claims 22 and 36 are nearly identical to claim 11, differing in their parent claims, but encompassing the same scope as claim 11. Thus, claims 22 and 36 are rejected for the same reasons as claim 11.

35. Regarding claim 25, Chehrazi has taught a processing system comprising an execution unit as in claim 23 (see Fig.1).

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

37. Claims 8-9, 19-20 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chehrazi et al., U.S. Patent No. 6,282,556 as applied to claim 1 above, and further in view of Mennemeier et al., U.S. Patent No. 6,036,350.

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38. Regarding claims 8, 19 and 33, taking claim 8 as exemplary, Chehrazi has taught a method as in claim 1, wherein the sum of third plurality of numbers are saved in an entry in a register file (see Col.20 lines 47-58). Chehrazi has not explicitly taught wherein the third plurality of numbers themselves are saved in an entry in a register file.

39. However, Mennemeier has taught storing a third plurality of numbers, specifically a vector of absolute differences, in a instruction specified register (see Mennemeier, Col.7 line 64 – Col.8 line 23) so that the absolute differences can be used in other operations that require the distance assessment that the results represent (see Mennemeier, Col.8 line 21-23). One of ordinary skill in the art would have recognized that it is desirable to retain results that will be used by future instructions so that the results don't need to be recalculated. Therefore, one of ordinary skill in the art would have found it obvious to modify the processor of Chehrazi to store the absolute differences, rather than the sum of the absolute differences, in an instruction specified register so that the values could be reused by other operations that require the data, thus improving throughput by avoiding the recalculation of the data.

40. Claims 19 and 33 are nearly identical to claim 8, differing in their parent claims, but encompassing the same scope as claim 8. Thus, claims 19 and 33 are rejected for the same reasons as claim 8.

41. Regarding claims 9, 20 and 34, taking claim 9 as exemplary, Chehrazi in view of Mennemeier has taught a method as in claim 8, wherein the single instruction specifies an index of the entry in a the register file (see Mennemeier, Col.7 line 64 – Col.8 line 23, as well as above paragraph 39).

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42. Claims 20 and 34 are nearly identical to claim 9, differing in their parent claims, but encompassing the same scope as claim 9. Thus, claims 20 and 34 are rejected for the same reasons as claim 9.

Conclusion

43. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objections made. Applicant must also show how the amendments avoid such references and objections. See 37 CFR § 1.111(c).

44. Mennemeier et al., U.S. Patent No. 5,742,529 has taught a method for calculating the absolute values of two vector operands.

45. Abdallah et al., U.S. Patent No. 6,243,803 has taught a method for calculating the absolute differences of packed vector data.

46. Wong, U.S. Patent No. 5,835,389 has taught a method for calculating the absolute differences of two numbers in a single instruction cycle.

47. Koba et al., U.S. PGPUB 2003/0005267 has taught a method for computing multiple absolute differences in response to a single instruction.

48. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry J. O'Brien whose telephone number is (703) 305-5864.

The examiner can normally be reached on Mon.-Fri. 6:30am-4:00pm.

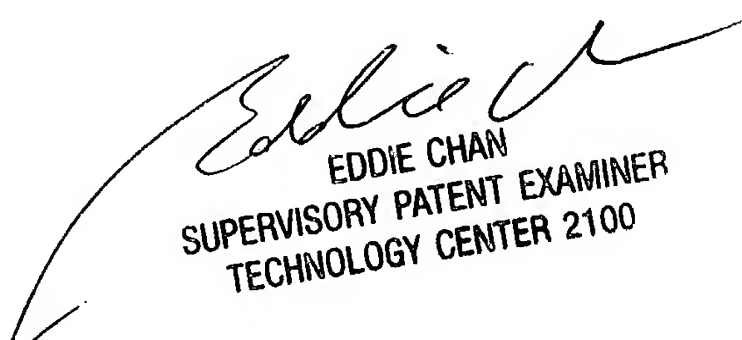
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (703) 305-9712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

49. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Barry J. O'Brien
Examiner
Art Unit 2183

BJO
8/3/2004



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SUPERVISORY PATENT EXAMINER
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